Effect of the nature of the anode buffer layer – MoO3, CuI or MoO3/CuI – on the performances of organic solar cells based on oligothiophene thin films deposited by sublimation

Titre	Effect of the nature of the anode buffer layer – MoO3, CuI or MoO3/CuI – on the performances of organic solar cells based on oligothiophene thin films deposited by sublimation
Type de publication	Article de revue
Auteur	Makha, Mohammed [1], Cattin, Linda [2], Ouro Djobo, Sanoussi [3], Stephant, Nicolas [4], Langlois, Nicole [5], Angleraud, Benoit [6], Morsli, Mustapha [7], Addou, Mohammed [8], Bernède, Jean Christian [9]
Editeur	EDP Sciences
Type	Article scientifique dans une revue à comité de lecture
Année	2012
Langue	Anglais
Pagination	31302
Volume	60
Titre de la revue	European Physical Journal: Applied Physics
ISSN	1286-0042
Résumé en anglais	An oligothiophene having a donor-acceptor-donor chromophore with hydrogen bonding groups is used as electron donor in planar heterojunction organic photovoltaic cells. We focus on the contact between the anode and the oligothiophene. Different anode buffer layers (ABLs) have been used, MoO_3 and CuI, alone or coupled with MoO_3. The thicknesses were 4 nm and 3 nm for MoO_3 and CuI respectively. It is shown that the ABL improves the cells performances. The best results are achieved with the couple MoO_3/CuI through an increase of the open circuit voltage and short circuit current. The optical absorption, the surface roughness and the organic film conductivity depend on the ABL. The conductivity of the oligothiophene film is one order of magnitude higher when the ABL is a CuI film. The influence of the ABL can be explained partly by the fact that it raises the anode work function. Nevertheless, the study of the structures ITO/ABL/oligothiophene shows that each ABL exhibits specific advantages and disadvantages. Therefore the couple MoO_3/CuI allows summing up the advantages of both ABLs, MoO_3 allows a very good band matching and avoids too high leakage current, while CuI allows achieving high Jsc thanks to its effect on the TTB conductivity.
URL de la notice	http://okina.univ-angers.fr/publications/ua12222 [10]
DOI	10.1051/epjap/2012120372 [11]

Liens

[1] http://okina.univ-angers.fr/publications?f[author]=21392

[2] http://okina.univ-angers.fr/publications?f[author]=3568
[3] http://okina.univ-angers.fr/publications?f[author]=21387
[4] http://okina.univ-angers.fr/publications?f[author]=4109
[5] http://okina.univ-angers.fr/publications?f[author]=21396
[6] http://okina.univ-angers.fr/publications?f[author]=21397
[7] http://okina.univ-angers.fr/publications?f[author]=3570
[8] http://okina.univ-angers.fr/publications?f[author]=21394
[9] http://okina.univ-angers.fr/c.bernede/publications
[10] http://okina.univ-angers.fr/publications/ua12222
[11] http://dx.doi.org/10.1051/epjap/2012120372